

Serial No.: 10/023,324  
Amendment Dated: December 1, 2003  
Reply to Office Action of July 30, 2003

**REMARKS/ARGUMENTS**

**A Request for a One (1) Month Extension of Time Pursuant to 37 CFR §1.136(a) and (b)** is attached hereto.

The above-captioned patent application has been carefully reviewed in light of the non-final Office Action to which this Amendment is responsive.

Claims 1-9 are pending. The Examiner has rejected Claims 1, 2, 4 and 7-9 based on certain prior art. Applicants' gratefully acknowledge the allowability of Claims 3, 5 and 6 over the prior art of record.

As to the rejected claims, Applicants' respectfully request reconsideration based on the following comments.

Turning to the prior art rejections, Claims 1, 2 and 4 have been rejected under 35 USC §103(a) as being deemed obvious based on the combination of Ito et al. (U.S. Patent No. 6,570,282) and Ineson et al. (U.S. Patent No. 5,334,897).

Applicants' traverse the rejection in light of the following: First, and in order to maintain a *prima facie* obviousness rejection, each and every claimed limitation must be found, either singly or in combination, in the cited prior art. Those features that are not found must be notoriously well known to one of ordinary skill in the field of the invention.

Ito et al. (U.S. Patent No. 6,570,282 B1) has been relied upon, and in particular it appears Fig. 14 has been used in terms of comparison with the present invention as described in col. 1, line 10, col. 2. line 26. According to this description, a servo motor is shown including a motor drive source 63 as designated, a ball screw shift 68 and a hollow cylinder rod 65 to which a load is connected at one end 65a thereof. The opposite end 65b of the ball screw shaft is connected to a ball screw nut 67. Power is fed to the motor by means of an amplifier 75, rotating the motor shaft 63, and the ball screw shaft 68. The rotation of the cylinder rod 65 is stopped based on its connection to the ball screw nut 67. As noted by the Examiner, there is no provision for a tapered wedge that is introduced between the motor stator and the inside wall of the housing of the actuator.

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Ineson et al. (U.S. Patent No. 5,334,897) describes a sealed electric motor in general that includes a metallic housing. Among the components of the motor, noted by the Examiner, is a cylindrical stator shroud 14, see Fig. 1, as well as col. 2, lines 49-60. This shroud as described is not tapered nor does it fit within a tapered opening corresponding to that of the wedge. The member/shroud is merely tubular in configuration.

Applicants' therefore do not understand the application of the herein applied prior art references since specific limitations have been completely overlooked or ignored as part of the Examiner's analysis, particularly with regard to Claim 1.

According to the present invention, the stator assembly of the motor of the herein-described electromechanical linear actuator is secured to the inside wall of the housing thereof in a stationary position by means of an annular wedge that includes a tapered outer surface that is fitted into a complimentary tapered opening in the housing. In assembly, the wedge is tightly inserted between the body of the stator and the tapered wall of the housing to securely hold the motor wherein the stator retains the windings of the motor. Moreover, one or more prestressed Belville washers are used/mounted between the wedge and one of the end sections of the actuator housing to provide a holding force against the wedge in assembly.

Preferably, each of the stator wedge as well as the center section of the actuator housing are also each fabricated from a material having a high coefficient of thermal conductivity. As such, the stator windings of the motor are therefore kept substantially in undisturbed contact with the inner wall of the actuator housing when the motor is subjected to thermal stress while a thermally conductive travel path is provided to efficiently transfer heat from the housing into the ambient surroundings. Neither Ito et al. nor Ineson et al. recite nor suggest such a mechanism(s) as described herein.

In addition, neither Ito nor Ineson recite or describe a ball screw assembly that includes a tapered opening wherein the ball screw shaft includes a tapered section that is contained therein and is tightly secured within a complimentary tapered hole in the rotor assembly of the motor such that the shaft extends outwardly

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beyond one end of the rotor assembly. See Fig. 1 illustrating the fit of tapered end 68 of the ball screw shaft 65 into the wall 69 of hub rotor 40. As such, the end of the shaft 65 further includes preferably a threaded spline 70 passing through the wall 69 engaged by a nut 71 wherein tightening of the nut pulls the tapered section 69 of the shaft 65 tightly into the complimentary tapered opening in the hub wall, thereby locking the shaft tightly into the hub.

Applicants' have amended Claim 1 to further clarify and particularly point out the present invention. More particularly, Applicants' have now positively recited the complimentary tapered portion into which the arcular wedge fits into the housing. Applicants' have also added new Claim 10 to recite that the tapered wedge and at least the portion of the housing engaged with the wedge are each fabricated from a material having a high thermal conductivity. Support is found at page 5, lines 29-30. Therefore, it is believed no new matter has been added. Since Claim 1 is now deemed to be patentably distinct, it is believed that Claims 2 and 4 are also allowable for the same reasons. Reconsideration is respectfully requested.

Applicants' have also amended Claim 3 to correct a minor formal antecedent bases problem.

The Examiner has also rejected Claims 7-9 under 35 USC §103(a) as being unpatentable over Ito et al., Ineson et al. and further in view of Appleford et al. (U.S. Patent No. 6,572,076). Applicants' traverse this rejection.

As noted and in order to maintain a *prima facie* obviousness rejection under the Statute, each essentially claimed limitation must be found in the cited art. As previously noted with regard to independent Claim 1, as amended, neither Ito et al. or Ineson et al. describe or suggest providing a tapered wedge that engages a corresponding tapered opening for retaining a stator assembly for a motor of the actuator relative to an inner wall of the housing. Appleford et al., now recited by the Examiner, fails to further teach or infer any notion of this feature. As a result, there can be no *prima facie* obviousness rejection that can be maintained relative to Claim 1. Therefore, Claims 7-9 are also believed to be allowable over this prior art of record. Reconsideration is respectfully requested.

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In summary, it is believed the above-captioned patent application is now in an allowable condition and such allowance is respectfully requested.

If the Examiner wishes to expedite disposition of the above-captioned patent application, he is invited to contact Applicants' representative at the telephone number below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-0289.

Respectfully submitted,

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